Table 1
Statistical Summary of Detected Compounds in Soil Samples[1]

Analyte	Number of Detections	Number of Samples	Minimum	Maximum[2]	Average	Standard Deviation	95% Upper Confidence Level (UCL) of the Mean	Frequency of Detection	USEPA Region IX PRGs[3]
			Concentration (µg/kg)						Concentration (µg/kg)
Pesticides									
Dieldrin	15	60	ND	240	12	31	19	25%	30
Diquat	8	12	ND	7,500	3317	2,271	4,494	67%	130,000
Endrin	6	60	ND	50	8.9	11	11	10%	18,000
4,4'-DDT	40	60	ND	380	39	64	53	67%	1,700
4,4'-DDE	40	60	ND	1,500	110	269	168	67%	1,700
alpha-Chlordane	4	60	ND	50	8.3	10	11	7%	1,600
gamma-Chlordane	4	60	ND	50	8.3	10	10	7%	1,600
Heptachlor epoxide	1	60	ND	50	8	10	10	2%	53
gamma-BHC (Lindane)	1	60	ND	94	9.1	15	12	2%	440
			Concentration (mg/kg)						Concentration (mg/kg)
Metals									
Arsenic	136	136	ND	37	11.2	8.1	12	100%	0.39
Barium	50	50	95	440	123	47	134	100%	5,400
Beryllium	3	50	ND	0.52	0.27	0.062	0.28	6%	150
Cadmium	50	50	1.7	3.6	2.8	0.33	2.9	100%	37
Chromium	50	50	27	55	38	4.4	39	100%	210
Cobalt	50	50	7.2	12	9.0	1.1	9.2	100%	900
Copper	50	50	21	39	29	5.2	30	100%	3,100
Cyanide	2	50	ND	0.32	0.18	0.047	0.19	4%	11
Lead	50	50	1.2	63	22	12	26	100%	400
Mercury	38	50	ND	0.28	0.074	0.054	0.087	76%	23
Nickel	50	50	39	60	48	4.5	49	100%	150
Vanadium	50	50	24	44	31	3.9	32	100%	550
Zinc	50	50	44	99	63	12	66	100%	23,000

Notes:

[1] Includes all data except: 020923-ENV-1-7.0, 020923-ENV-1-10.0, Rinseate (020801-DW-A) and Sediment trap liquid (030401-SEDPIT-1-W)

[2] Maximum detected concentration.

[3] October 1, 2002, *USEPA Region IX Prelimary Remediation Goals (PRGs)* for residential soil

ND = not detected

Table 2
Comparison of Background Concentrations of Inorganics in Soil

	BAREC Concentration at 0.5 feet bgs				BAREC	Background Concentration			
Inorganic Chemical	Number of Samples	Minimum (mg/kg)	Maximum (mg/kg)	Average (mg/kg)	Background Sample BG-A[1] (mg/kg)	Number of Samples	Range (mg/kg)	Average (mg/kg)	Location/ Source
Arsenic	66	2.6	37	18	5.4	72	0.3 - 69	6.6	Western US/Dragun&Chiasson 1991
						50	0.6 - 11.0	3.5	California/Bradford et al. 1996
						108	ND - 20	2.9	Northern Santa Clara/Scott 1991
						1397	ND-42	5.5	Lawrence Berkeley National Laboratory/2002
Barium	50	95	440	123	440	75	150 - 1,500	687	Western US/Dragun&Chiasson 1991
						50	133 - 1,400	509	California/Bradford et al. 1996
						1397	ND-490	130	Lawrence Berkeley National Laboratory/2002
Beryllium	50	ND	0.52	0.27	ND	75	ND - 3.0	0.5	Western US/Dragun&Chiasson 1991
						50	0.25 - 2.70	1.3	California/Bradford et al. 1996
						158	ND - 3.2	0.9	Northern Santa Clara/Scott 1991
						1397	ND-1.2	0.42	Lawrence Berkeley National Laboratory/2002
Cadmium	50	1.7	3.6	2.8	2.4	24	0.01 - 22	3.5	Western US/Dragun&Chiasson 1991
						50	0.05 - 1.7	0.4	California/Bradford et al. 1996
						158	ND - 14	NC	Northern Santa Clara/Scott 1991
						1395	ND-7.5	NC	Lawrence Berkeley National Laboratory/2002
Chromium, total	50	27	55	38	55	75	10 - 1,500	118	Western US/Dragun&Chiasson 1991
						50	23 - 1,579	122	California/Bradford et al. 1996
						158	ND - 170	51	Northern Santa Clara/Scott 1991
						1403	ND-144	58	Lawrence Berkeley National Laboratory/2002
Cobalt	50	7.2	12	9	9.2	75	ND - 50	13	Western US/Dragun&Chiasson 1991
						50	2.7 - 46.9	15	California/Bradford et al. 1996
						1397	ND-29	14	Lawrence Berkeley National Laboratory/2002
Copper	50	21	39	29	31	75	5.0 - 300	49	Western US/Dragun&Chiasson 1991
						50	9.1 - 96.4	29	California/Bradford et al. 1996
						136	4.6 -67	36	Northern Santa Clara/Scott 1991
						1400	ND-69	32	Lawrence Berkeley National Laboratory/2002
Lead	50	1.2	63	23	1.2	75	ND - 300	29	Western US/Dragun&Chiasson 1991
						50	12.4 - 97.1	24	California/Bradford et al. 1996
						158	ND -54	11	Northern Santa Clara/Scott 1991
						1398	ND-84	7	Lawrence Berkeley National Laboratory/2002
Mercury	50	ND	0.28	0.07	0.15	73	0.01 - 1.5	0.15	Western US/Dragun&Chiasson 1991
						50	0.05 - 0.9	0.26	California/Bradford et al. 1996
						127	ND -1.3	NC	Northern Santa Clara/Scott 1991
						1406	ND-2.2	NC	Lawrence Berkeley National Laboratory/2002
Nickel	50	39	60	48	44	75	<5.0 - 200	38	Western US/Dragun&Chiasson 1991
						50	9 - 509	57	California/Bradford et al. 1996
						136	6 -145	74	Northern Santa Clara/Scott 1991
						1399	6 - 380	68	Lawrence Berkeley National Laboratory/2002
Vanadium	50	24	44	31	43	75	30 - 500	125	Western US/Dragun&Chiasson 1991
						50	39 - 288	112	California/Bradford et al. 1996
						1397	ND-120	46	Lawrence Berkeley National Laboratory/2002
Zinc	50	44	99	63	44	75	25 - 212	78	Western US/Dragun&Chiasson 1991
						50	88 - 236	149	California/Bradford et al. 1996
						136	7.8 -120	65	Northern Santa Clara/Scott 1991
						1396	3.8 - 190	64	Lawrence Berkeley National Laboratory/2002

Table 2
Comparison of Background Concentrations of Inorganics in Soil

Inorganic Chemical	BAREC Concentration at 0.5 feet bgs				BAREC Background Sample BG-A[1] (mg/kg)	Background Concentration			
	Number of Samples	Minimum (mg/kg)	Maximum (mg/kg)	Average (mg/kg)		Number of Samples	Range (mg/kg)	Average (mg/kg)	Location/ Source

Notes:

NC = Not Calculated. ND - Not Detected

1 Collected at 0.75 feet below ground surface (bgs).

Sources:

Bradford, G.R., A.C. Chang, A.L. Page, D. Bakhtar, J.A. Frampton, and H. Wright. 1996. *Background Concentrations of Trace and Major Elements in California Soils.* Kearney Foundation Special Report. University of California, Division of Agriculture and Natural Resources, Kearney Foundation of Soil Science. March

Dragun, J., and A. Chiasson. 1991. *Elements in North American Soils.* Greenbelt, MD: Hazardous Materials Control Resources Institute.

Scott, Christina. 1991. *Background Metal Concentrations in Soils in Northern Santa Clara County California* . University of San Francisco, Masters Thesis

LBNL. 2002. Analysis of *Background Distributions of Metals in Soil at the Lawrence Berkeley National Laboratory (LBNL)* . University of California, Environmental Restoration Program. June

Table 3
Statistical Summary of Arsenic Results

	BAREC Arsenic Concentration (mg/kg)			
	All Data	**Shallow[1]**	**Deep[2]**	**Arsenic less than 20 mg/kg in Field 4[3]**
No. of Samples	*136*	*66*	*72*	*138*
Minimum Concentration	*0.5*	*2.6*	*0.5*	*0.5*
Maximum Concentration	*37.0*	*37*	*29*	*20*
Average Concentration	*11*	*16*	*7*	*9*
Standard Deviation	*8.1*	*7.1*	*6.0*	*5.4*
t-value	*1.7*	*1.7*	*1.7*	*1.7*
95% UCL of the Mean	*12*	*18*	*8*	*9*

Notes:
Calculations exclude decon water sample (020801-DW-A), and
Sediment trap liquid sample (030401-SEDPIT-1-W).

1 Shallow - samples at 0.5 feet below ground surface.

2 Deep - samples from greater than 2 feet below ground surface.

3 These statistics are for shallow and deep soil,
and it is assumed that arsenic concentrations greater than 20 mg/kg are
replaced with arsenic concentrations of 7 mg/kg.

Table 4
Potentially Applicable or Relevant and Appropriate Requirements (ARARs) and To Be Considered (TBCs)

Federal			
Standard, Requirement, Criteria, Limitation	**Citation**	**Description**	**Type of ARARs (Chemical, Location or Action; or a TBC)**
Classification and regulation of hazardous waste	42 USC 7401-7642	Establishes criteria for the determination of hazardous waste and its regulation	Chemical/Action
Hazardous Waste Identification	40 CFR 261.24	Establishes criteria to determine whether solid waste exhibits hazard characteristics of toxicity	Chemical/Action
Transport of Hazardous Waste	40 CFR 263	Standards applicable to transporters of hazardous waste	Action
Clean Air Act	42 USC 7401-7642	Emission Standards from stationary and mobile sources	Action
Occupational Health and Safety	29 CFR 1910.120	Establishes requirements for health and safety training.	Action
Health Risk Assessment	US EPA, Risk Assessment Guidance for Superfund, 1989	Guidance and framework to assess health risk	TBCs (Action)
Soil Screening Guidance	USEPA, Soil Screening Guidance, July 1996	Methodology for developing site-specific screening levels	TBCs (Chemical)
Preliminary Remediation Goals	US EPA, Region IX	Establishes screening numbers based on health risk assessment	TBCs (Chemical)

CFR - Code of Federal Regulation
USC - United States Code

Table 4
Potentially Applicable or Relevant and Appropriate Requirements (ARARs) and To Be Considered (TBCs)
(Continued)

State and Local			
Standard, Requirement, Criteria, Limitation	**Citation**	**Description**	**Type of ARARs (Chemical, Location or Action; or a TBC)**
Determination of Hazardous Waste	22 CCR 66260.1 et seq.	Establishes criteria for determining waste classification for the purposes of transportation and disposal of wastes	Chemical
Hazardous Waste Generator Requirements	22 CCR 66262.1 et seq.	Establishes standards applicable to generators of hazardous waste	Action
Ambient Air Quality Standards	H&S Sec. 39000-44071	Establishes standards for emissions of chemical vapors and dust	Chemical
Transportation of Hazardous Waste	22 CCR Chapter 13	Governs transportation of hazardous materials.	Action
Environmental Impact Review	Public Resources Code Sections 21000-21177	Mandates environmental impact review of projects approved by governmental agencies.	Action
Emission Standard	Regulation 6, Rule 40 Regulation 8	Establishes emission standard for particulate matter; and notification requirement.	Chemical
Grading permit	City of Santa Clara Ordinance	Permit required for site excavation and grading activities	Action
Stockpiling Requirements of Contaminated Soil	H&S Sec. 25123.3(a)(2)	Establishes standards for stockpiling of non-RCRA contaminated soil	Action
Occupational Health and Safety	8 CCR Sect. 1500, 2300, and 3200 et seq.	Establishes standards for working conditions and employees	Action

CCR - Code of California Regulation H&S - Health and Safety Code

Table 5
Estimated Cost of Alternative 2

Alternative 2 - Capping and Implementation of Institutional Controls				
Task Item	*Estimated No. of Units*	*Units*	*Unit Cost*	
Capital Costs				
Excavation and Capping Costs:				
Lab Sampling	50	ea.	$ 50.00	$ 2,500
Excavation and Load (Backhoe-loader, hydraulic, wheel mounted, 1-1/4 C.Y. cap.)	500	cy	$ 18.00	$ 9,000
Transportation and Disposal of Excavated Soil (18 cy dump truck)	500	cy	$ 45.00	$ 22,500
Dust Control (water truck rental, with operator)	5	day	$ 875.00	$ 4,375
Import & Hauling of Clean Fill Material (12 cy dump truck, 10 mile round trip, 0.60 load/hr) for cap and excavated areas	4337	cy	$ 25.00	$ 108,426
Placement of Clean Fill Material (dozer, no compaction)	4337	cy	$ 2.00	$ 8,674
Mobilization of Dozer for placement (up to 50 miles)	1	LS	$ 279.26	$ 279
Demobilization of Dozer for placement (up to 50 miles)	1	LS	$ 279.26	$ 279
Compaction of Fill Material (walk behind, vibrating plate 18" wide, 6" lifts, 4 passes)	4337	cy	$ 2.50	$ 10,843
Access/Egress Adjustments (Gate for 6' high fence, galv. Steel)	2	LS	$ 330.03	$ 660
Air Monitoring	1	LS	$ 20,000.00	$ 20,000
Preparation of Site Management Plan	1	LS	$ 50,000.00	$ 50,000
Institutional Controls	1	LS	$ 50,000.00	$ 50,000
Preparation of Remedial Activities Documentation Report	1	LS	$ 25,000.00	$ 25,000
Engineering and Design (15%)				**$ 46,880**
Contingency (15%)				**$ 46,880**
Total Estimated Capital Costs				**$ 406,297**
Annual Operation and Maintenance				
Cap Maintenance (includes periodic patching and inspection)	1	LS	$ 5,000.00	$ 5,000
Contingency (20%)				$ 1,000
Subtotal Annual O&M Costs				**$ 6,000**
Present Value	30	years	7%	$ 74,454
Total Estimated Capital and O&M Costs				$ 480,751

Table 6
Estimated Cost of Alternative 3

Alternative-3 - Excavation with Off-site Disposal				
Task Item	*Estimated No. of Units*	*Units*	*Unit Cost*	
Excavation (Arsenic Cleanup Goal of 20 ppm) Costs:				
Lab Sampling	150	ea.	$ 50.00	$ 7,500
Excavation and Load (Backhoe-loader, hydraulic, wheel mounted, 1-1/4 C.Y. cap.)	6000	cy	$ 18.00	$ 108,000
Transportation and Disposal of Excavated Soil (18 cy dump truck)	6000	cy	$ 45.00	$ 270,000
Dust Control (water truck rental, with operator)	10	day	$ 875.00	$ 8,750
Import & Hauling of Clean Fill Material (12 cy dump truck, 10 mile round trip, 0.60 load/hr)	6000	cy	$ 25.00	$ 150,000
Placement of Clean Fill Material (dozer, no compaction)	6000	cy	$ 2.00	$ 12,000
Mobilization of Dozer for placement (up to 50 miles)	1	LS	$ 279.26	$ 279
Demobilization of Dozer for placement (up to 50 miles)	1	LS	$ 279.26	$ 279
Compaction of Fill Material (walk behind, vibrating plate 18" wide, 6" lifts, 4 passes)	6000	cy	$ 2.50	$ 15,000
Access/Egress Adjustments (Gate for 6' high fence, galv. Steel)	2	LS	$ 330.03	$ 660
Air Monitoring	1	LS	$ 75,000.00	$ 75,000
Preparation of Remedial Activities Documentation Report	1	LS	$ 25,000.00	$ 25,000
Engineering and Design (15%)				**$ 100,870**
Contingency (15%)				**$ 100,870**
Total Estimated Cost				**$ 874,209**

Table 7
Comparative Analysis of Alternatives

	Removal Action Alternative - Rating Points		
Criterion	Alternative 1: No Action	Alternative 2: Capping and Implementation of Institutional Controls	Alternative 3: Excavation with Offsite Disposal
Effectiveness			
Ability to Meet RAOs	0	1	1
Compliance with Cleanup Goals	0	0	1
Reduction of Mobility and/or Volume	0	0.5	1
Long-Term Effectiveness and Permanence	0	0	1
Short-Term Effectiveness	0	1	1
Implementability			
Technical/Administrative Feasibility	1	0	1
Availability of Goods & Services	1	1	1
Ease of Construction	1	1	1
State and Community Acceptance	0	1	2
Cost	5	3	1
TOTAL	8	8.5	11

Table 8
Anticipated Number of Days for Project Implementation and Reporting

Schedule of Tasks			
Task	**Days[1] to Complete**	**Cumulative Days**	**Notes**
Building Demolition	14	14	Not part of RAW, but must be completed prior to RAW implementation
Site Preparation	7	21	
Excavation Activities	14	35	Assumes minimal weather delays
Site Restoration	7	42	
Reporting	28	70	

1 Calendar days